

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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Ex parte XUJUN HUA  
and  
MAKHLOUF LALEG

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Appeal No. 2005-0440  
Application No. 09/994,075

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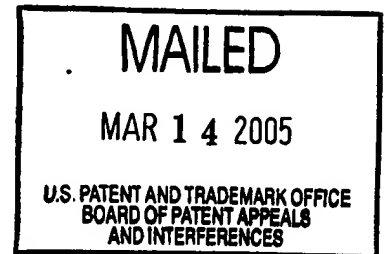
ON BRIEF

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Before GARRIS, PAK, and DELMENDO, Administrative Patent Judges.  
DELMENDO, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on an appeal under 35 U.S.C. § 134 (2004) from the examiner's final rejection of claims 1 through 10, 12, and 20 through 25 in the above-identified application. (Final Office action mailed Feb. 4, 2003.) Claim 11, the only other pending claim, was also finally rejected but subsequently allowed. (Examiner's answer mailed Oct. 9, 2003 at 1.)



Appeal No. 2005-0440  
Application No. 09/994,075

The subject matter on appeal relates to a method of inhibiting alkaline darkening of a mechanical pulp in the presence of a calcium carbonate filler. Further details of this appealed subject matter are recited in representative claim 1 reproduced below:

1. A method of inhibiting alkaline darkening of a mechanical pulp in the presence of a calcium carbonate filler comprising:  
providing an aqueous suspension of a mechanical pulp for producing paper, and  
incorporating in said suspension a calcium carbonate filler for producing paper with the pulp, and a sulphite to inhibit alkaline darkening of said pulp in said suspension arising from the calcium carbonate filler in the suspension.

In addition to the appellants' admitted prior art (specification at page 2, lines 13-21), the examiner relies on the following prior art references as evidence of unpatentability:

Hovey	2,173,167	Sep. 19, 1939
Tsukamoto et al. (Tsukamoto)	4,183,146	Jan. 15, 1980
Eckert	4,427,490	Jan. 24, 1984
Evans et al. (Evans)	5,882,476	Mar. 16, 1999 (filed May 5, 1995)
Nye (published US Statutory Invention Registration)	H1690	Nov. 04, 1997

Appeal No. 2005-0440  
Application No. 09/994,075

Schumacher et al.                      0 608 687 A1                      Aug. 03, 1994  
(EP '687) (published EP  
application)

Drummond                                      WO 96/20308                      Jul. 04, 1996  
(WO '308) (published PCT  
application)

The appealed claims stand rejected under 35 U.S.C. § 103(a)  
as follows:

- I.    claims 1 through 7, 10, and 20 through 25 as  
      unpatentable over WO '308 in view of Eckert or Evans  
      (answer at 3-4);
- II.   claim 8 as unpatentable over WO '308 in view of Eckert  
      or Evans and further in view of Tsukamoto (id. at 4);
- III. claim 9 as unpatentable over WO '308 in view of Eckert  
      or Evans and further in view of Nye or EP '687 (id.);
- IV.   claim 12 as unpatentable over WO '308 in view of  
      Eckert or Evans and further in view of the appellants'  
      admitted prior art (id. at 5);
- V.    claims 1 through 8, 10, and 20 through 25 as  
      unpatentable over Hovey in view of Tsukamoto (id. at  
      5-6);
- VI.   claim 9 as unpatentable over Hovey in view of  
      Tsukamoto and further in view of Nye or EP '687 (id.  
      at 6);

VII. claim 12 as unpatentable over Hovey in view of  
Tsukamoto and further in view of the appellants'  
admitted prior art (id.)

We affirm all seven rejections. Because we are in complete agreement with the examiner's factual findings and legal conclusions, we adopt them as our own and add the following comments primarily for emphasis.<sup>1</sup>

The examiner's rejections are based on two alternative principal prior art references, namely WO '308 and Hovey. Each of these principal prior art references is combined with various other prior art references as evidence in support of a determination of obviousness.

WO '308 discloses that "paper from mechanical pulps lose brightness due to alkaline darkening of the pulp when fillers such as calcium carbonate are used in the papermaking process." (Page 2, lines 6-10.) Thus, WO '308 is concerned with solving

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<sup>1</sup> The appellants submit that "[t]he claims...are separately patentable." (Appeal brief filed Jun. 23, 2003 at 5.) We note, however, that the appellants rely on the same argument for all the appealed claims. While the appellants summarize the limitations set forth in appealed claims 1-10 and 20-25 (id. at 16-19), "[m]erely pointing out differences in what the claims cover is not an argument as to why the claims are separately patentable." See 37 CFR § 1.192(c)(7)(2004) (effective Apr. 21, 1995). Thus, consistent with this regulation, we hold that all

the same problem as the appellants' claimed invention.

(Specification at 1-2.) To solve the problem of alkaline darkening associated with the presence of calcium carbonate filler in the pulp, WO '308 teaches the use of an aqueous solution of "any type of bleaching agent" such as sodium hydrosulfite, e.g. by application of an aqueous solution of the sodium hydrosulfite on the paper produced from the pulp. (Page 3, lines 3-6; page 4, line 29 to page 5, line 9; Examples 1 and 3; Tables 1 and 3.)

Eckert discloses (column 1, lines 58-65):

More usually, unbleached lignocellulosic pulps are bleached or brightened to a brightness consistent with the planned utilization of the pulp, brightness being a measure of pulp reflectivity under standardized conditions. Pulp bleaching is most often a multi-stage process employing various chemicals to remove or alter the lignin of the lignocellulosic pulp such that the resultant pulp is no longer light absorbing or dark in color. [Emphasis added.]

Eckert further teaches that reducing agents (e.g., sulfurous acids, hydrosulphites, borohydrides, amineboranes, and bisulfites) or oxidizing agents (e.g., chlorine based compounds, peroxides, ozone, oxygen, peracids, permanganates, and chromates) are commonly used as bleaching agents. (Column 1,

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claims stand or fall together and confine our discussion to representative claim 1.

line 66 to column 2, line 4.) While Eckert's disclosure focuses on "a peroxide-based delignifying and bleaching solution" at a pH between about 1 and about 7 (column 1, lines 16-19; column 3, lines 56-58), the reference teaches that the bleaching agent is added to a slurry of the pulp.

Evans discloses a method of deinking recycled fibers by disintegrating waste paper in an alkaline aqueous solution containing sodium sulfite and sodium carbonate to produce a fibrous slurry having a pH of at least about 7.5, separating the ink from the fibers, and removing the ink from the slurry.

(Column 1, lines 47-52.) According to Evans, the disclosed process "advantageously provides the alkalinity needed to separate the ink without embrittling or darkening the fibers."

(Column 1, lines 52-54.) Evans further states that the addition of a combination of the sodium sulfite and sodium carbonate into the pulp slurry eliminates or greatly reduces the need for "additional bleaching." (Column 2, lines 47-50; column 3, lines 34-51.)

We agree with the examiner that the teachings of WO '308 and Eckert or Evans, taken together, would have led one of ordinary skill in the art to add sodium sulfite or a combination of sodium sulfite and sodium carbonate into the pulp slurry of

Appeal No. 2005-0440  
Application No. 09/994,075

WO '308 with the reasonable expectation of brightening the pulp, thus arriving at a method encompassed by appealed claim 1. Both the motivation to combine the references and the requisite reasonable expectation of success are founded in the prior art, not in the appellants' own disclosure. In re Vaeck, 947 F.2d 488, 493, 20 USPQ2d 1438, 1442 (Fed. Cir. 1991)(citing In re Dow Chemical Co., 837 F.2d 469, 473, 5 USPQ2d 1529, 1531 (Fed. Cir. 1988)).

Hovey, the other principal prior art reference, teaches a method for making pulp in which approximately 3 to 9% of calcium carbonate filler is used to offset discoloration attributable to alkalinity. (Page 2, column 1, lines 60-65.) Thus, as admitted by the appellants (appeal brief at 6), Hovey "recognizes the problem of alkaline darkening caused by the alkalinity of the calcium carbonate."

Tsukamoto teaches that a sulfonating compound such as a sulfite, hydrogensulfite, or pyrosulfite improves mechanical strength and brightness of the pulp. (Column 3, lines 25-36 and 48-52; column 4, lines 7-11.)

Thus, we also agree with the examiner that one of ordinary skill in the art would have combined the teachings of Hovey and Tsukamoto, thus arriving at a method encompassed by appealed

claim 1. Specifically, it is our judgment that one of ordinary skill in the art would have found it prima facie obvious to treat Hovey's slurry with a sulfonating compound such as a sulfite in order to improve the mechanical strength and brightness of the paper as suggested in Tsukamoto.

The appellants argue that the hydrosulfite described in WO '308 removes the chromophores already produced by alkaline darkening, whereas the inhibition or prevention of darkening in the claimed invention stops or reduces the production of new chromophores. (Appeal brief at 5.) In support of this argument, the appellants rely on Example V (and the accompanying data summarized in Table 3) of the specification as well as Examples VII and VIII (and the accompanying data summarized in Tables 4 and 5) appended to the brief.<sup>2</sup> (Id. at 5-6 and 11-12.)

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<sup>2</sup> It appears from the image file wrapper (IFW) history that Examples VII and VIII were submitted as part of an appendix to the amendment filed on Oct. 17, 2002. Because these experiments do not appear to have been submitted in affidavit or declaration form as required under 37 CFR § 1.132 (2004) (effective Sep. 20, 2000) ("any evidence submitted to traverse the rejection or objection on a basis not otherwise provided for must be by way of an oath or declaration..."), we consider them to be mere lawyer's arguments unsupported by factual evidence. Cf. In re Geisler, 116 F.3d 1465, 1470, 43 USPQ2d 1362, 1365 (Fed. Cir. 1997); In re De Blauwe, 736 F.2d 699, 705, 222 USPQ 191, 196 (Fed. Cir. 1984); In re Wood, 582 F.2d 638, 642, 199 USPQ 137, 140 (CCPA 1978); In re Lindner, 457 F.2d 506, 508-09, 173 USPQ 356, 358 (CCPA 1972).



Appeal No. 2005-0440  
Application No. 09/994,075

We, like the examiner (answer at 6-7), find the appellants' argument unconvincing. At best, Table 3 of the present specification indicates that the use of two, rather than one, bleaching treatment steps (i.e., pre-treatment with sodium sulfite followed by treatment with hydrosulfite) provided slightly higher brightness than a single bleaching treatment (treatment with hydrosulfite) at a slurry pH of 7.0. As pointed out by the examiner (answer at 6-7), such a result is entirely expected. In view of the teachings of the prior art references, one of ordinary skill in the art would have reasonably expected that carrying out multiple bleaching steps would provide pulp with higher brightness than a single bleaching step. (See, e.g., Eckert at column 1, lines 62-65; Evans at column 1, lines 31-33 and 36-40; Tsukamoto at column 3, lines 25-36 and column 4, lines 7-11.)

Additionally, we also agree with the examiner's claim construction (answer at 7) that appealed claim 1 does not limit when the sulfite is to be added to the slurry. In other words, appealed claim 1 reads on a process in which the slurry is subjected to a single bleaching step. While appealed claim 1 recites "inhibiting alkaline darkening," no evidence substantiates the appellants' allegation that the prior art

Appeal No. 2005-0440  
Application No. 09/994,075

bleaching treatments would not result in some inhibition of darkening. On this point, we note that the paper produced in WO '308 exhibited brightness values significantly higher (59.3) than those reported for the claimed invention in Table 3 of the specification (56.8 and 57.5).

Moreover, the relied upon evidence is far from being commensurate with the appealed claims. Specifically, Example V of the specification is limited to pre-treatment with 0.5 and 1% sodium sulfite (4% cs., 85°C, 2 hours) followed by treatment with 7.0% hydrosulfite (3.7% cs., 60°C for 40 minutes) at a pH of 7.0. By contrast, appealed claim 1, is considerably broader in scope in terms of the sulfite compound, additional bleaching agent, the treatment conditions and duration, and the nature of the pulp slurry. In re Kulling, 897 F.2d 1147, 1149, 14 USPQ2d 1056, 1058 (Fed. Cir. 1990) ("'[O]bjective evidence of nonobviousness must be commensurate in scope with the claims.'") (quoting In re Lindner, 457 F.2d 506, 508, 173 USPQ 356, 358 (CCPA 1972)); In re Dill, 604 F.2d 1356, 1361, 202 USPQ 805, 808 (CCPA 1979) ("The evidence presented to rebut a prima facie case of obviousness must be commensurate in scope with the claims to which it pertains.").

The appellants urge that Hovey uses high calcium carbonate loadings and that, therefore, "[t]he brightening achieved by Hovey results not from inhibition of the alkaline darkening but by masking the darkened pulp with the higher loading..." (Appeal brief at 6.) We first note that appealed claim 1 encompasses any calcium carbonate loading. As to "inhibition of the alkaline darkening," Tsukamoto provides the requisite motivation, suggestion, or teaching to carry out sulfite treatment for the purpose of improving mechanical strength and brightness. Inhibition of alkaline darkening would follow from combining the two prior art references as a necessary incident to improving mechanical strength and brightness because the sulfite treatment in Tsukamoto is identical to that recited in appealed claim 1. In this regard, we point out that the motivation to combine the prior art references need not be identical to that of the applicants in order to establish obviousness under 35 U.S.C. § 103(a). In re Kemps, 97 F.3d 1427, 1430, 40 USPQ2d 1309, 1311 (Fed. Cir. 1996); In re Dillon, 919 F.2d 688, 693, 16 USPQ2d 1897, 1901 (Fed. Cir. 1990) (en banc).

The appellants argue that Eckert, Evans, and Tsukamoto do not teach alkaline darkening caused by calcium carbonate.

Appeal No. 2005-0440  
Application No. 09/994,075

(Appeal brief at 7-8 and 14.) This argument is unpersuasive, because our obviousness analysis is based on what the collective teachings of the prior art would have suggested to one of ordinary skill in the art. In re Keller, 642 F.2d 413, 426, 208 USPQ 871, 882 (CCPA 1981) ("[O]ne cannot show non-obviousness by attacking references individually where, as here, the rejections are based on combinations of references.").

The appellants contend that Tsukamoto is not concerned with pulp suspensions but rather wet wood pulp mass having a higher solids content. (Appeal brief at 14.) We note, however, that Tsukamoto teaches that the sulfonating agent may be mixed with the pulp before dewatering. (Column 3, lines 40-52.)

The remaining references (namely Nye, EP '687, and the admitted prior art) are applied against appealed claims 9 and 12. Because the appellants' arguments against these claims are the same as that against appealed claim 1, we determine that the teachings of these references would be cumulative to WO '308, Eckert, Evans, Hovey, and Tsukamoto.

For these reasons and those set forth in the answer, we affirm the examiner's rejections under 35 U.S.C. § 103(a) of: (i) claims 1 through 7, 10, and 20 through 25 as unpatentable over WO '308 in view of Eckert or Evans; (ii) claim 8 as

Appeal No. 2005-0440  
Application No. 09/994,075

unpatentable over WO '308 in view of Eckert or Evans and further in view of Tsukamoto; (iii) claim 9 as unpatentable over WO '308 in view of Eckert or Evans and further in view of Nye or EP '687; (iv) claim 12 as unpatentable over WO '308 in view of Eckert or Evans and further in view of the appellants' admitted prior art; (v) claims 1 through 8, 10, and 20 through 25 as unpatentable over Hovey in view of Tsukamoto; (vi) claim 9 as unpatentable over Hovey in view of Tsukamoto and further in view of Nye or EP '687; and (vii) claim 12 as unpatentable over Hovey in view of Tsukamoto and further in view of the appellants' admitted prior art.

The decision of the examiner is affirmed.

Appeal No. 2005-0440  
Application No. 09/994,075

No time period for taking any subsequent action in  
connection with this appeal may be extended under 37 CFR  
§ 1.136(a).

AFFIRMED

  
Bradley R. Garris

Administrative Patent Judge

  
Chung K. Pak

Administrative Patent Judge

  
Romulo H. Delmendo

Administrative Patent Judge

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Appeal No. 2005-0440  
Application No. 09/994,075

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